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審査請求 未請求 請求項の数1(全4頁)

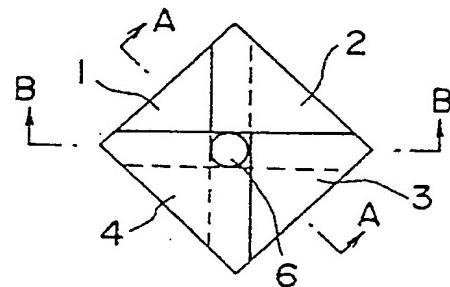
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(54) 【発明の名称】 エアーバッグの製法

(57) 【要約】

【構成】 正四角形の一枚の布の4隅を該正四角形の一辺の1/2より多く内側に折り疊んで形成される各内面と外面の重なり合い部を接合し、接合部に剪断力がかかる構造である四角の袋形状よりなるエアーバッグの製法。

【効果】 接合部がエアーバッグの周辺部に位置せず、接合が布帛の外面と内面の貼り合せ構造、接合力が極めて強いエアーバッグが得られる。また、低強力、軽量の布帛の使用が可能となり、収納性が向上したエアーバッグが得られる。



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## 【特許請求の範囲】

【請求項1】 正四角形の布帛の各隅が、該正四角形の一辺の1/2より多く内側に折り畳まれて各折り畳み部の辺が相互に重なり合い、該重なり合い部が相互に接合して袋形状を形成しており、かつ、該重なり合い部側の中央にインフレーターの取りつけ部を有することを特徴とするエアーバッグの製法。

## 【発明の詳細な説明】

## 【0001】

【産業上の利用分野】 本発明は自動車等高速移動体の衝突時、乗員を危険から保護するためのエアーバッグの構造に関する。さらに詳しくは、一枚の布帛よりなり、折り畳み重なり部を接合することにより袋形状とした軽量、かつ、収納性が良好で簡単に製造できるエアーバッグに関する。

## 【0002】

【従来の技術】 従来、エアーバッグは円形状又は四角形状に裁断した2枚の布地の外周部をミシン縫製、あるいは、接着剤接着によって接合して袋形状を形成するか、円形状に一部部と二重部を織成することによって袋形状を形成したものが用いられている。

【0003】 これら従来のエアーバッグの最大の問題点は、自動車などの衝突時にガス発生装置（以下インフレーターという）が作動して、発生したガスの圧によりバッグが瞬時に膨張したとき、エアーバッグに加わる内圧によりバッグの接合部分からのバーストのおそれがあることであった。そのためエアーバッグは、信頼性、安全性の面より用いる布帛強力を過剰に大きくする必要があり、また、接合部の補強や目止め処理などで製造工程も複雑となり、エアーバッグとして高重量、嵩高となって収納面からも問題となっていた。

【0004】 そのため、上記のような問題を解決するため、接合部分からのバーストのおそれがないエアーバッグ、即ち、周辺部に接合部がないエアーバッグの開発が切望されていた。

## 【0005】

【発明が解決しようとする課題】 本発明の目的は、周辺部分にバーストのおそれがなく、軽量で収納性が良好なエアーバッグの製法を提供しようとするものである。

## 【0006】

【課題を解決するための手段】 即ち、本発明は、正四角形の布帛の各隅が、該正四角形の一辺の1/2より多く内側に折り畳まれて各折り畳み部の辺が相互に重なり合い、該重なり合い部が相互に接合して袋形状を形成しており、かつ、該重なり合い部側の中央にインフレーター取りつけ部を有することを特徴とするエアーバッグの製法、である。

【0007】 本発明において布帛とは、織布、編布、不織布、あるいは、これらの複合体など、繊維糸条からなる平面シートをいうが、エアーバッグの耐圧性やバッグ

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製造工程中の扱い易さなどから織布が好ましい。織布は綿維糸条のマルチフィラメントヤーン、加工糸、テープヤーン、スプリットヤーン、あるいは、これらの複合糸からなる平織、バスケット織、格子織、朱子織、綾織などの織布である。

【0008】 また本発明に用いる繊維糸条の材料は、ナイロン6、66、46などのポリアミド繊維、ポリパラフェニレンテトラミド繊維などのアラミド繊維、ポリアルキレンテレフタレートなどのポリエステル繊維、全芳香族ポリエステル繊維、ビニロン繊維などが挙げられる。本発明に用いる布帛はエアーバッグの排気方式に応じて、基布排気方式であれば糸使いデニール、織密度、目付などの調整により所要の通気性を有せしめるか、部分不通気性化加工を行なったものが好ましい。また、ペントホール排気方式であれば完全不通気性化加工を行なったものが好ましい。

【0009】 不通気性化加工は布帛の少なくとも片面にクロロブレンゴム、シリコンゴム、難燃性アクリルゴム、難燃性ウレタン樹脂などの難燃性エラストマーによるコーティング、トッピング、ラミネートなどの被覆加工であるが、特に難燃化が要求されないときには、SBR、NBR、NR、ウレタンなどのエラストマー加工でもよい。

【0010】 また、部分不通気性化加工は上記難燃性エラストマーあるいは難燃性エラストマーによる部分コーティング、あるいはエアーバッグのドライバー側のみのコーティングなどの被覆加工が好ましい。また、基布排気方式であっても必要に応じて難燃化加工を施すことが好ましい。

【0011】 本発明は、接合部を重ね合わせて接着することが必要である。本発明は、一枚の正四角形の布帛を袋状とすることが重要なことである。かかる正四角形の布帛の一辺の長さは、エアーバッグの大きさ、容量に応じて適宜選定すればよいが、通常70~150cm位のものを用いる。本発明は、正四角形の布帛の4つの隅をそれぞれ正四角形の一辺の1/2より多く内側に折り畳むことが必要である。

【0012】 本発明において、正四角形の一辺の1/2より多く折り畳むとは、各折り畳み部によって生ずる夫々の直角三角形の直角をはさむ辺、即ち、折り畳み部の辺が次に折り疊んだ折り畳み部の辺と相互に重なり合うだけの量で折り畳むことをいう。上記の重なり合う量は接合部の強力あるいは作業性などから重ね代として1~6cm程度が好ましい。従って、折り畳み量は正四角形の一辺の1/2プラス0.5~3cm程度となる。

【0013】 また、正四角形の布帛の4つの隅が重なり合った中央部、即ち、重なり合い部の中央部にインフレーターの取りつけ部を有せしめる場合には、通常、正四角形の布帛の折り畳み量は一辺の1/2プラス4~8cm程度とすることが好ましい。これによって重なり合

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い部の重ね代は8~16cmとなり、インフレーターの取りつけ部を有せしめることが容易となる。

【0014】また、この場合にはインフレーターの取りつけ部は4枚の重なり合い部にあるため特別な補強は必要としない。なお、インフレーターの取りつけ部が4枚の重なり合い部からはずれるときには必要に応じて補強を行なうことが望ましい。本発明は正四角形の4隅の折り畳みによって生ずる重なり合い部を相互に接合する。この接合によりエアーバッグに加わる内圧の力は接合部で剪断力として働くこととなる。

【0015】本発明は接合方法として超音波ウエルダー、高周波ウエルダーなどによる溶着接合、ゴム系あるいは樹脂系接着剤による接着接合、ホットメルト系接着剤による熱接着接合、これらとミシン縫製との併用接合などが用いられるが重ね代を面で接合することが肝要である。特に、接着剤接合、ホットメルト剤接着接合などの接着接合が効果的で比較的容易に行ないえるため好ましい。しかし、布帛の糸間に接着剤が浸透しすぎると好ましくない。この場合、接着剤はあらかじめ正四角形の布帛の折り畳みによる重なり合い部となる位置に付与しておいてもよく、また、折り畳みの都度、その部分に接着剤を付与してもよい。

【0016】なお、溶着接合の場合は、接合が他の部分にまで及ばないよう、溶着しない材料によるセパレーターなどを併用することが好ましい。本発明によって得られるエアーバッグは正四角形の布帛の4隅が折り畳みによる重なり合い部の接合によって得られるものであるから、その形状は四角形の袋形状となる。この四角形袋形状の4隅は必要に応じて折り曲げ固定するか、あるいは先端をカットしてペントホールとしてもよい。

【0017】なお、インフレーターの取りつけ部は正四角形の布帛の4隅にあらかじめインフレーターと同寸法の切欠部や切り込み部を形成しておくか、重ね合わせ後にこれを形成してもよい。本発明のエアーバッグの製法によると、従来のような高強力高重量の織物を使用しなくてもバーストなどのおそれがないエアーバッグが得られる。また、軽量、かつ、収納性の面でも良好なものが得られ、従来のような複雑な製造工程を必要とせず簡単な製法である。

#### 【0018】

【実施例】以下、実施例により詳細に説明する。

#### 【0019】

【実施例1】420デニールのナイロン66糸よりなる経、緯糸密度が46/本インチ、の平織物(幅82cm)の片面にクロロプレンゴムをコーティングした。(固型分塗布量50g/m<sup>2</sup>)。この布帛を長さ方向に82cmカットし、縦、横82cmの正四角形の布帛を得た。この正四角形の布帛の4隅をコーティング面を内側にしてそれぞれ43cm折り畳んで重ね合わせ部を接合した(重ね代4cm)。

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【0020】接合は20μm厚、融点が120℃のホットメルトフィルム(共重合ナイロンフィルム)を重ね代と同寸法として重ね合わせ部分の間にはさみ込み、180℃で熱圧着した。引張り試験による接合部の剪断強力は布帛強力とほぼ同じ67kg/1cm幅であった。接合部の中央に中心から4.5cmの切り込みを放射線状に計8本入れ直径9cmのインフレーターの取りつけ部を形成した。得られたエアーバッグは正四角形で一辺の長さが55cm、空気充填(内圧0.01kg/cm<sup>2</sup>時)の内容積は約50リットルであった。

【0021】また、得られたエアーバッグの重量は190gと非常に軽量、柔軟で、コンパクトに折り畳みが可能でハンドルへの収納性は良好である。得られたエアーバッグの内部にゴム風船を入れて、風船の中に空気を内圧2.0kg/cm<sup>2</sup>まで充填したがエアーバッグの破裂や損傷は全く起らなかった。

#### 【0022】

【実施例2】500デニールのポリエステル糸よりなる経、緯とも55本/インチの格子織物(糸7本毎に2本引き揃え糸を配した、幅100cmのもの)にウレタンエラストマーを片面コーティング(固型分塗布量35g/m<sup>2</sup>)した。このコーティング布帛を長さ方向に100cmカットして、一辺が100cmの正四角形の布帛を得た。この正四角形の布帛の4隅をコーティング面を内側にしてそれぞれ55cm折り畳んで、重ね合わせ部を接合した(重ね代10cm)。

【0023】接合はウレタン系接着剤を重ね代に20g/m<sup>2</sup>塗布して糸の間に浸透しないようにして接着した。引張り試験による接合部の接着強力(剪断力)は布帛強力とほぼ同じ65kg/1cm幅であった。接合部の中央(4枚重ね部)に直径9cmのインフレーター取りつけのための切欠部を設けた。得られたエアーバッグは正四角形で一辺の長さが62cm、空気充填(内圧0.01kg/cm<sup>2</sup>時)の内容積は約60リットルであった。

【0024】また、重量は225g/m<sup>2</sup>でコンパクトに折り畳みができ、収納性は良好であった。この得られたエアーバッグは内部にゴム風船を入れて空気を充填する試験で内圧20kg/cm<sup>2</sup>でも破裂、損傷、破壊は起らなかった。かくしてなる実施例1、2のような本発明によって得られるエアーバッグは接合部での力のかかり方は剪断力となり、接合部の強力は非常に強いものとなる。

【0025】また、本発明によると正四角形の布帛の4隅を折り畳むことにより得られるエアーバッグが得られるから、インフレーターから最長となるエアーバッグの4隅は布帛の伸びにくい経糸、緯糸の方向となり、また、最短となるエアーバッグの縁部は布帛の伸びやすいバイヤス方向となるため内圧のかかり方が均一となり、エアーバッグの耐圧性は更に向上する。

【0026】また、本発明の製法は1枚の正四角形の布帛の折り畳み重ね接合によるものであるため、接合部の特別な補強あるいは目止めなどは必要としない。そのため製造工程も極めて単純であり、簡単に製造できる。さらに、本発明のエアーバッグの製法は正四角形の布帛を用いるものであるから材料ロスが全く発生しないため、コスト面でも極めて有利となる。

## 【0027】

【比較例1】実施例1で用いたコーティング布帛から一辺が59cmの正四角形の布帛2枚をとりコーティング面を内側にして重ね合わせて、周囲四辺を接着幅4cmで実施例1と同様のホットメルトフィルムを間にはさんで接合し、一辺が55cmの四角形袋体とした。引張り試験で接合部には剥離力がかかり、剥離強力は2kg/cmと極めて弱く、この四角形袋体に実施例1と同様にしてゴム風船を入れて空気を充填したところ、0.1kg/cm<sup>2</sup>で接合部が破壊した。

## 【0028】

【比較例2】ホットメルトフィルムの代りに#5のミシン糸により縫製して接合した以外は比較例1と同様にして一辺が55cmの四角形袋体とした。引張り試験では縫製部に剥離力がかかり、剥離強力（縫製部の強力）は35kg/cmであった。この四角形袋体にインフレーター取りつけ部を形成し、実施例1と同様にしてゴム風船を入れて空気を充填したところ1.3kg/cm<sup>2</sup>で縫製部が破壊した。

## 【0029】

【発明の効果】本発明の製法によって得られるエアーバ

ッグはガス圧により展張したときにエアーバッグの縁部には接合部が位置しないため、布帛の強力がそのままエアーバッグの耐圧強力となるものである。また、本発明のエアーバッグ製法によると布帛の低目付化、低デニール化が可能となり、軽量、柔軟、低嵩高性で収納性良好なエアーバッグが得られる。

## 【図面の簡単な説明】

【図1】本発明によって得られるエアーバッグの一例を模式的に示す断面図（図7 A-A面で切断）

10 【図2】本発明によって得られるエアーバッグの一例を模式的に示す断面図（図7 B-B面で切断）

【図3】本発明の製法の順序を示すもので、正四角形の布帛の一隅を折り畳んだ状態を示す平面図

【図4】図1の状態から、さらに正四角形の布帛の二つ目の隅を折り畳んだ状態を示す平面図

【図5】図2の状態からさらに三つ目の隅を折り畳んだ状態を示す平面図

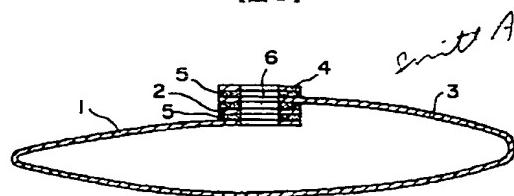
【図6】正四角形の布帛の四隅を折り畳んだ状態を示す平面図

20 【図7】インフレーター取付部を設けたエアーバッグの一例を示す平面図

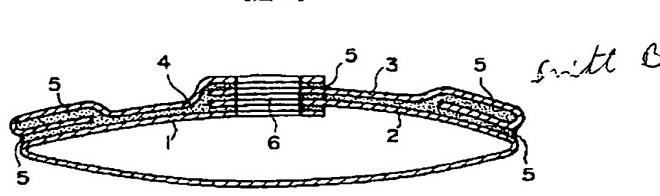
## 【符号の説明】

- 1 正四角形の布帛の一隅を折り畳んだ部分
- 2 正四角形の布帛の二つ目の隅を折り畳んだ部分
- 3 正四角形の布帛の三つ目の隅を折り畳んだ部分
- 4 正四角形の布帛の四つ目の隅を折り畳んだ部分
- 5 接着剤層
- 6 インフレーター取付部

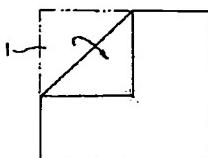
【図1】



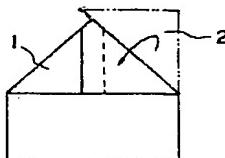
【図2】



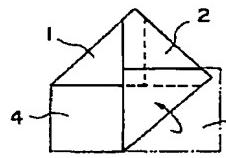
【図3】



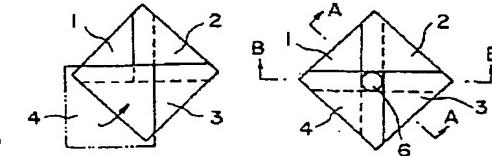
【図4】



【図5】



【図6】



【図7】

# PATENT ABSTRACTS OF JAPAN

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(71)Applicant : ASAHI CHEM IND CO LTD

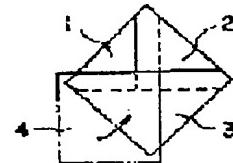
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(72)Inventor : MIYAKE MASAAKI  
ISHIDA MINORU

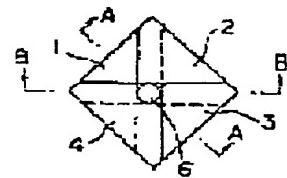
## (54) PRODUCTION OF AIR BAG

### (57)Abstract:

PURPOSE: To produce a lightweight air bag having no possibility of burst in its peripheral part and having excellent containment properties by a method wherein the sides of respective folded parts are mutually overlapped and the overlapped parts are mutually bonded to be formed into a bag shape and an inflator mounting part is provided to the center of the bag-shaped body on the side of the overlapped parts.



CONSTITUTION: The corner parts of a regular tetragon are folded so as to exceed 1/2 the length of one side 1 of the regular tetragon. That is, said corner parts are folded in quantity such that the sides forming the right angle of each of right-angled triangles generated by folding are mutually overlapped with the sides 2 of the next folded parts. Overlap quantity is pref. about 1-6 cm as an overlap width. Therefore, the folding quantity becomes 0.5-3 cm + the length 1/2 that of one side of the rectangular tetragon. When the mounting part of an inflator 6 is provided to the center of the overlapped parts, the folding quantity of square cloth is set to about 4-8cm + the length 1/2 that of one side of the cloth. By this constitution, an air bag having no possibility of burst is obtained.



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## DETAILED DESCRIPTION

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### [Detailed Description of the Invention]

[0001]

[Industrial Application] this invention relates to the structure of the air bag for carrying out dangerous shell protection of the crew at the time of the collision of high-speed mobiles, such as an automobile. In more detail, it consists of a textile of one sheet and is related with lightweight [ which was made into the bag configuration ], and the air bag which receipt nature can be good and can manufacture easily by joining the fold-up lap section.

[0002]

[Description of the Prior Art] Conventionally, what the air bag joined the periphery section of two cloth cut out in the circle configuration or the square configuration by sewing-machine sewing or adhesives adhesion, and formed the bag configuration, or formed the bag configuration by \*\*\*\*\* which weaves the single section and the double section in a circle configuration is used.

[0003] The greatest trouble of the air bag of these former was that there is fear of the burst from a part for a joint of a bag with the internal pressure which joins an air bag, when a bag spread in an instant by \*\* of the gas which the gas generator (henceforth an inflator) operated and generated at the time of the collision of an automobile etc. Therefore, the air bag needed to enlarge superfluously the textile strong force of using from the field of reliability and safety, and became complicated [ a manufacturing process ] by reinforcement of a joint, \*\*\*\* processing, etc., became Shigekazu Taka and bulky as an air bag, and had become a problem from the receipt side.

[0004] Therefore, in order to solve the above problems, it was anxious for development of an air bag without fear of the burst from a part for a joint, i.e., the air bag which does not have a joint in a periphery.

[0005]

[Problem(s) to be Solved by the Invention] The purpose of this invention does not have fear of a burst in a part for a periphery, it is lightweight and receipt nature tends to offer the process of a good air bag.

[0006]

[Means for Solving the Problem] namely, the process of the air bag characterized by more each corner of the textile of a right square than 1/2 [ of this right square ] of one side being folded up inside, the sides of each folding section overlapping mutually, for this overlap section joining mutually, and for this invention forming the bag configuration, and having the inflator attachment section in the center by the side of this overlap section -- it comes out

[0007] Although a textile means flat-surface sheets which consist of a fiber line of thread, such as textile fabrics, \*\*\*\*, nonwoven fabrics, or these complex, in this invention, the pressure resistance of an air bag, the ease of treating in a bag manufacturing process, etc. to textile fabrics are desirable. Textile fabrics are textile fabrics, such as plain weave which consists of the multifilament yarn, the finished yarn, the tape yarn, the split yarns, or these compound thread of a fiber line of thread, a basket weave, \*\*\*\*, a satin, and twill.

[0008] Moreover, as for the material of a fiber line of thread used for this invention, polyester fibers, such as aramid fibers, such as polyamide fibers, such as nylon 6, and 66, 46, and poly para-phenylene TETORAMIDO fiber, and polyalkylene terephthalate, all aromatic-polyester fiber, Vynylon fiber, etc. are mentioned. As for the textile used for this invention, what will be made to

have necessary permeability, adjustment of a thread usage denier, fabric density, eyes, etc. according to the exhaust system of an air bag if it is a base-fabric exhaust system, or performed partial imperviousness-ized processing is desirable. Moreover, if it is a vent-hole exhaust system, what performed perfect imperviousness-ized processing is desirable.

[0009] Although it is coating, such as coating by fire-resistant elastomers, such as chloroprene rubber, silicone rubber, a fire-resistant acrylic rubber, and a fire-resistant urethane resin, a topping, and a lamination, when especially flameproofing is not required at least of one side of a textile, elastomer processing of SBR, NBR.NR. urethane, etc. is sufficient as imperviousness-ized processing.

[0010] Moreover, partial imperviousness-ized processing has desirable coating, such as partial coating by the above-mentioned fire-resistant elastomer or the blame inflammability elastomer, or coating only by the side of the driver of an air bag. Moreover, even if it is a base-fabric exhaust system, it is desirable to give flameproofing processing if needed.

[0011] this invention needs to pile up a joint and to paste up. this invention is that it is important to make the textile of the right square of one sheet into a saccate. Although what is necessary is just to select suitably a length of one side of the textile of this right square according to the size of an air bag, and capacity, the thing of 70-150cm grade is usually used for it. this invention needs to fold up more four corners of the textile of a right square than 1/2 [ of a right square ] of one side inside, respectively.

[0012] In this invention, the side to which the side which sandwiches the right angle of each right triangle produced by each folding as folding up mostly from 1/2 [ of a right square ] of one side, i.e., the side of the fold-up section, next folded up and which it folds up and is folded up only in the amount which overlaps the side of the section and mutual is said. The amount which the above overlaps has about 1-6 desirablecm as heavy cost from powerful or workability of a joint etc.

Therefore, the amount of folding serves as about 0.5-3cm of 1/2 pluses of one side of a right square.

[0013] Moreover, when making the center section of the center section where four corners of the textile of a right square overlapped, \*\*\*\*\* , and the overlap section have the attachment section of an inflator, as for the amount of folding of the textile of a right square, it is usually desirable to consider as about 4-8cm of 1/2 pluses of one side. It overlaps by this, the heavy cost of the section is set to 8-16cm, and it becomes easy to make the attachment section of an inflator have.

[0014] Moreover, since the attachment section of an inflator is in the overlap section of four sheets in this case, special reinforcement is not needed. In addition, when the attachment section of an inflator shifts from the overlap section of four sheets, reinforcing if needed is desirable. this invention joins mutually the overlap section produced by folding of four corners of a right square. The force of internal pressure of joining an air bag by this junction will be committed as shearing force by the joint.

[0015] Although the adhesive joint by the welding junction by the ultrasonic welder, the high frequency welder, etc., the rubber system, or resin system adhesives, the heat adhesive joint by hot-melt system adhesives, the combined use junction to these and sewing-machine sewing, etc. are used as the junction method, as for this invention, it is important to join heavy cost in a field. Since an adhesive joint of an adhesive joint, a hot-melt agent adhesive joint, etc. can carry out effectively and comparatively easily especially, it is desirable. However, it is not desirable if adhesives permeate too much between the thread of a textile. In this case, adhesives may be given to the position which serves as the overlap section by folding of the textile of a right square beforehand, and may give adhesives to the portion at every folding.

[0016] In addition, in welding junction, it is desirable to use together the separator by the material which is not welded etc. so that junction may not attain to even other portions. Since it is obtained by junction of the overlap section according [ four corners of the textile of a right square ] to folding in the air bag obtained by this invention, the configuration turns into a square bag configuration. It bends and fixes if needed, or four corners of this square bag configuration cut a nose of cam, and are good also as a vent hole.

[0017] In addition, the attachment section of an inflator forms the notch and the slitting section of an inflator and this size in four corners of the textile of a right square beforehand, or may form this after superposition. According to the process of the air bag of this invention, even if it does not use the

textiles of high powerful Shigekazu Taka like before, an air bag without fear, such as a burst, is obtained. Moreover, lightweight and what is good also in respect of receipt nature are obtained, and a complicated manufacturing process like before is not needed, but it is an easy process.

[0018]

[Example] Hereafter, an example explains in detail.

[0019]

[Example 1] It consisted of 420-denier Nylon 66 thread, and passed, and woof density coated one side of the plain weave fabric (width of face of 82cm) of 46-/book inch \*\* with chloroprene rubber. (Solid part coverage 50 g/m<sup>2</sup>). This textile was cut in the length direction 82cm, and the textile of length and a 82cm wide right square was obtained. The coating side was carried out inside, respectively, four corners of the textile of this right square were folded up 43cm, and were piled up, and the section was joined (heavy cost 4cm).

[0020] 20-micrometer \*\* and the melting point piled up the hot-melt film (copolymerization nylon film) which is 120 degrees C as heavy cost and this size, put junction between portions, and carried out thermocompression bonding at 180 degrees C. the shearing strong force of the joint by the tensile test -- a textile -- they were the almost same 67kg / 1cm width of face as powerful A total of eight 4.5cm slitting was put in in the center of a joint in the shape of radiation from the center, and the attachment section of an inflator with a diameter of 9cm was formed. As for the obtained air bag, a length of one side of the content volume of 55cm and air restoration (at the time of internal pressure 0.01 kg/cm<sup>2</sup>) was about 50l. in the right square.

[0021] Moreover, folding is compactly [ very as lightweight / the weight of the obtained air bag / as 190g, flexibly, and ] possible, and the receipt nature to a handle is good. the interior of the obtained air bag -- a balloon -- putting in -- the inside of a balloon -- air -- internal pressure 2.0 kg/cm<sup>2</sup> up to - although filled up, the rupture or the injury on an air bag did not take place at all

[0022]

[Example 2] It consisted of 500-denier polyester thread, and passed, and \*\* carried out one side coating (solid part coverage 35 g/m<sup>2</sup>) of the urethane elastomer to 55 grids [/inch ] textiles (thing with a width of face of 100cm which subtracted two, arranged for every seven thread, and arranged thread). This coating textile was cut in the length direction 100cm, and the textile of the right square whose one side is 100cm was obtained. The coating side was carried out inside, four corners of the textile of this right square were folded up 55cm, respectively, and the superposition section was joined (heavy cost 10cm).

[0023] Junction is urethane system adhesives to heavy cost 20 g/m<sup>2</sup> It applied, and as it did not permeate between thread, it pasted up. adhesion of the joint by the tensile test -- being powerful (shearing force) -- a textile -- they were the almost same 65kg / 1cm width of face as powerful The notch for inflator attachment with a diameter of 9cm was prepared in the center (four-sheet pile section) of a joint. As for the obtained air bag, a length of one side of the content volume of 62cm and air restoration (at the time of internal pressure 0.01 kg/cm<sup>2</sup>) was about 60l. in the right square.

[0024] Moreover, a weight is 225 g/m<sup>2</sup>. Folding was completed compactly and receipt nature was good. This obtained air bag is internal pressure 20 kg/cm<sup>2</sup> by the examination which puts a balloon into the interior and is filled up with air. But rupture, an injury, and destruction did not take place. How depending on which the air bag obtained by this invention like the examples 1 and 2 which become in this way requires the force in a joint serves as shearing force, and the strong force of a joint becomes a very strong thing.

[0025] Moreover, since the air bag obtained by folding up four corners of the textile of a right square is obtained according to this invention and the marginal part of an air bag which four corners of an air bag which serve as the longest from an inflator serve as the direction of the warp with which a textile cannot be extended easily, and the woof, and serves as the shortest serves as the direction of bias where a textile tends to be extended, how which internal pressure requires becomes uniform, and the pressure resistance of an air bag improves further.

[0026] Moreover, since the process of this invention is what is depended on fold-up pile junction of the textile of the right square of one sheet, special reinforcement of a joint or eye \*\*\*\* does not need. Therefore, a manufacturing process is also very simple and can be manufactured easily. Furthermore, since the textile of a right square is used and a material loss does not occur at all, the

process of the air bag of this invention becomes very advantageous also in respect of cost.

[0027]

[The example 1 of comparison] Took two textiles of the right square whose one side is 59cm from the coating textile used in the example 1, and it piled up by \*\*\*\*ing a coating side inside, and in between, the same hot-melt film as an example 1 was joined by the style by adhesion width of face of 4cm, and the circumference neighborhood was used as the square bag body whose one side is 55cm. When the ablation force was applied to the joint by the tensile test, the ablation strong force was very as weak as 2kg / 1cm, the balloon was put into this square bag body like the example 1 and it was filled up with air, it is 0.1 kg/cm<sup>2</sup>. The joint broke.

[0028]

[The example 2 of comparison] It considered as the square bag body whose one side is 55cm like the example 1 of comparison except having carried out sewing with the sewing thread of #5 instead of the hot-melt film, and having joined. a tensile test -- the sewing section -- the ablation force -- starting -- ablation -- being powerful (the sewing section being powerful) -- they were 35 kg/cm<sup>2</sup> When the inflator attachment section was formed in this square bag body, the balloon was put in like the example 1 and it was filled up with air, it is 1.3 kg/cm<sup>2</sup>. The sewing section broke.

[0029]

[Effect of the Invention] since a joint is not located in the marginal part of an air bag when the air bag obtained by the process of this invention is spread with gas pressure -- the strong force of a textile -- as it is -- the proof pressure of an air bag -- it becomes powerful Moreover, according to the air-bag process of this invention, the reduction in the eyes of a textile and low denier-ization are attained, and an air bag with good receipt nature is obtained by lightweight, adaptability, and the low loft.

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